

CLAIMS

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A method for inhibiting activity of a T lymphocyte against a target cell, which method comprises contacting the target cell with a soluble form of a CD8 molecule.

2. The method according to claim 1, wherein the soluble CD8 is human CD8.

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3. The method according to claim 1 ~~or claim 2~~, wherein the soluble CD8 comprises all or a substantial part of the native CD8 immunoglobulin domain, optionally substituted at one or more amino acid residues.

4. The method according to claim 3, wherein the soluble CD8 further comprises a fragment of the membrane-proximal stalk region of CD8.

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5. The method according to *claim 1* ~~any one of claims 1 to 4~~, wherein the soluble CD8 is provided as a multimer of two or more CD8 molecules.

6. A composition comprising a soluble form of a CD8 molecule together with a pharmaceutically acceptable diluent, excipient or carrier.

7. The composition according to ~~claim 6~~, for immunosuppressive therapy.

8. A multimer of soluble CD8, comprising two or more CD8 molecules attached to one another via a linker molecule.

9. A protein having the sequence as shown in figure 1b, said protein folded as a dimer and having the property of inhibiting the action of cytotoxic T cell lymphocytes to kill target cells.

10. A protein which differs from that shown in figure 1b in one or more of the following respects:

- methionine present at the N-terminus;
- one or a few amino acid residues absent from the

N-terminus;

- one or a few amino acid residues added at the N-terminus consisting of part or all of the sequence leu - leu - leu - his - ala - ala - arg - pro -;
 - 5 • one or a few amino acid residues absent from the C-terminus; but with at least a part of the region defined by amino acid residues 116 – 120 retained;
 - one or a few amino acid residues added at the C-terminus consisting of part or all of the sequence - ala - pro - arg - pro - pro -thr -
 - 10 pro – ala;
 - part or all of the CD8 cytoplasmic membrane peptide sequence added at the C-terminus;
 - conservative variants of one or many amino acid residues which do not materially affect the CD8 functionality of the protein;
 - 15 • mutations which do alter the CD8 functionality, including those which increase or abolish the property of inhibiting the action of cytotoxic T cell lymphocytes to kill target cells;
 - the addition of a protein or peptide, at the N or C terminus for the purposes of purification;
 - 20 • the provision of a label for detection;
- said protein folded as a dimer and having the property of affecting the action of cytotoxic T cell lymphocytes to kill target cells.
11. A protein according to claim 10, which is a soluble CD8 molecule containing a substantial part of the extracellular region of CD8,
- 25 including the immunoglobulin domain and a fragment of the membrane-proximal stalk region, which CD8 molecule is not disulphide-linked between the two chains of the molecule.
12. A protein according to claim 10, in which E replaces N at position ¹⁰⁰~~99~~.

13. A protein according to claim 10, in which EE replaces QN at position ⁵⁵ ~~54~~, ⁵⁶ ~~55~~.
14. A complex of a protein according to ~~any one of claims 9 to 13~~ ^{claim 9} with HLA - A2.
15. A complex as claimed in claim 14 in crystalline form with a stoichiometry of one protein dimer to one HLA - A2 peptide unit.
16. A method of producing the recombinant protein according to any one of claims 9 to 13, which method comprises the steps of:
- i) providing a CD8 derived gene suitably modified to allow expression of a protein, essentially corresponding to at least the immunoglobulin-like domain of a CD8 protein, in a bacterium;
 - ii) effecting expression of said CD8 derived gene in said bacterium and recovering of the expressed protein from a bacterial culture;
 - 15 iii) treating the expressed protein to facilitate its purification and carrying out said purification.
17. The method of claim 16 wherein the CD8 derived gene provided at step i) is modified via silent mutations designed to increase expression via the prevention of the formation of a 5' hairpin secondary
- 20 structure in the expressed mRNA.
18. The method of ~~claims 16 or 17~~ ^{claim 16} wherein at step iii) the treatment of the expressed protein involves solubilising the protein and treating the protein so as to cause it to fold into a form resembling its native state, which is then purified.
19. The method of ~~any one of claims 16 to 18~~ ^{claim 16}, wherein the CD8 derived gene product corresponds to the immunoglobulin-like and membrane-proximal stalk regions of a CD8 protein.

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